Claim Amendments:

1. (currently amended) A method for determining the presence of a target chemical in a test fluid comprising:

providing a sensing system including;

(i) a micro-flow reservoir system having at least one micro-flow reservoir including a reagent fluid comprising a sensing substance which reacts with ~~the~~ said target chemical,

(ii) a sensor system comprising a thermopile for detecting the occurrence of ~~said~~ a reaction between said reagent fluid and said target chemical, said sensor system being connected to the micro-flow reservoir system,

(iii) a conduit connecting ~~the~~ said micro-flow reservoir system and ~~the~~ said sensor system for conveying said reagent fluid in ~~the~~ micro-flow reservoir system to ~~the~~ said sensor system,

immersing ~~the~~ said sensing system in ~~the~~ said test fluid, and continuously conveying ~~the~~ said reagent fluid in ~~the~~ said micro-flow reservoir system to ~~the~~ said sensor system, ~~and~~

detecting the occurrence of ~~a~~ said reaction between ~~the~~ said reagent fluid and ~~the~~ said target chemical within said conduit, and

removing said reagent fluid to a waste reservoir downstream from said sensor system.

2. (previously presented) A method according to claim 1 wherein the sensor system includes:

a thin film thermopile sensor having a plurality of sensing junctions and a plurality of reference junctions;

a hollow membrane fiber disposed proximate to each of said sensing junctions, wherein one end of said hollow membrane fiber is connected to the conduit means for receiving fluid from the micro-reservoir system and the other end is connected to a waste reservoir, said hollow membrane fiber having a porosity permitting passage therethrough of the target chemical from said test fluid while preventing passage therethrough of said sensing substance from said reagent fluid.

3. (previously presented) A method according to claim 1 wherein said reagent fluid includes a catalyst.

4. (previously presented) A method according to claim 3 wherein said catalyst is an enzyme which reacts with the target chemical to provide a heat that is proportional to the concentration of said target chemical.

5. (previously presented) A method according to claim 4 wherein said enzyme is selected form the group consisting of glucose oxidase, catalase, hexokinase, glucose dehydrogenase, cholesterol oxidase, lactase, urate oxidase, trypsin, apyrase, penicillinase, and mixture thereof.

6. (previously presented) A method according to claim 1 wherein said micro-flow reservoir system includes a micro-flow reservoir comprising a fluid including a calibration compound.

7. (previously presented) A method according to claim 6 wherein said calibration compound is selected from the group consisting of hydrogen peroxide, catalase, glucose, target chemical, and mixtures thereof.

8. (previously presented) A method according to claim 2 wherein said hollow membrane fiber comprises a semipermeable dialysis membrane, and wherein the outer diameter of said hollow membrane fiber is in thermal communication with said sensing junctions.

9. (previously presented) A method according to claim 8 wherein said semipermeable dialysis membrane comprises a compound selected from the group consisting of acetate, polysulfone, polyacrylonitrile, cellulose, and mixtures thereof.

10. (previously presented) A method according to claim 1 wherein said thermopile comprises:

a thin film thermopile disposed upon a supporting substrate, said thin film thermopile including a plurality of pairs of thin film thermocouple junctions, each of said pairs of thermocouple junctions including a reference junction and a sensing junction electrically coupled in series connection with one another and spaced apart from one another, said reference junction and a said sensing junction within each pair of thin film thermocouple junctions creating a temperature-dependent voltage when said reference junction and said sensing junction are electrically coupled in series connection, said plurality of pairs of thermocouple junctions being electrically coupled in series connection with one another between first and second output terminals, said plurality of pairs of thermocouple also having a plurality of output terminals

which are individually attached to a subset of reference junctions along the thermopile length in between the first and second terminals; and

wiring means coupled to each of said output terminals of said plurality of pairs of thin film thermocouple junctions for providing a voltage difference signal proportional to a difference in temperature measured proximate the sensing and reference junctions arising from reactions between the reagent fluid and target chemical.

11. (previously presented) A method according to claim 1 wherein the at least one reservoir including reagent fluid comprises:

a containment enclosing a collapsible bag that is held at positive pressure, said collapsible bag housing the reagent fluid; and

a resistance tubing having an open end that is immersed in the reagent fluid to create sufficient fluidic resistance to control the flow rate of said reagent fluid through said open end of said resistance tubing.

12. (currently amended) A method for determining the presence of a target chemical <u>in a test fluid</u> comprising:

providing a sensing system including;

(i) a micro-flow reservoir system having at least one micro-flow reservoir including a reagent fluid comprising a sensing substance which reacts with ~~the~~ <u>said</u> target chemical,

(ii) a sensor system comprising an optical cell connected to ~~the~~ <u>said</u> micro-flow reservoir system, and

(iii) a conduit connecting ~~the~~ said micro-flow reservoir system and ~~the~~ said sensor system,

immersing ~~the~~ said sensing system in ~~the~~ said test fluid,

continuously conveying ~~the~~ said reagent fluid in ~~the~~ said micro-flow system to ~~the~~ said sensor system, ~~and~~

detecting the occurrence of ~~a~~ said reaction between ~~the~~ said reagent fluid and ~~the~~ said target chemical within said conduit with said optical cell.

13. (previously presented) A method according to claim 12 wherein the reagent fluid comprises a reagent which exhibits a measurable change in optical properties upon contacting the target chemical.

14. (previously presented) A method according to claim 13 wherein said optical property is at least one selected from the group consisting of absorbance, fluorescence, color change, and chemiluminescence.

15. (previously presented) A method according to claim 13 wherein said sensing arrangement further comprises a gas permeable membrane fiber which is connected between said conduit and said sensor such that said gas permeable membrane fiber is in fluid contact with the test fluid.

16. (previously presented) A method according to claim 13 further comprising a micro-flow reservoir comprising a sweep fluid,

a conduit connecting said reservoir comprising a sweep fluid to one end of a hollow membrane fiber which is in fluid contact with said test fluid wherein the other end is connected to the conduit comprising the reagent fluid down flow from said sensor.

17. (previously presented) A method according to claim 16 wherein the sweep fluid is selected from the group consisting of water and saline.

18. (previously presented) A method according to claim 16 wherein said reagent is mixed with said sweep fluid, thereby causing a measurable optical change.

19. (previously presented) A method according to claim 18 wherein said optical property is at least one selected form the group consisting of absorbance, fluorescence, color change, and chemiluminescence.